Using Hands-on Activities

Dorit Kaufman

Stony Brook University

Summer Institute for

Mathematics & Science Teachers

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Hands-on Activities

Select Words Associated with this Mode of Teaching

Hands-on Activities

Brainstorm

Participation & Engagement

Motivation

Movement

Dynamic

Authentic

Concrete

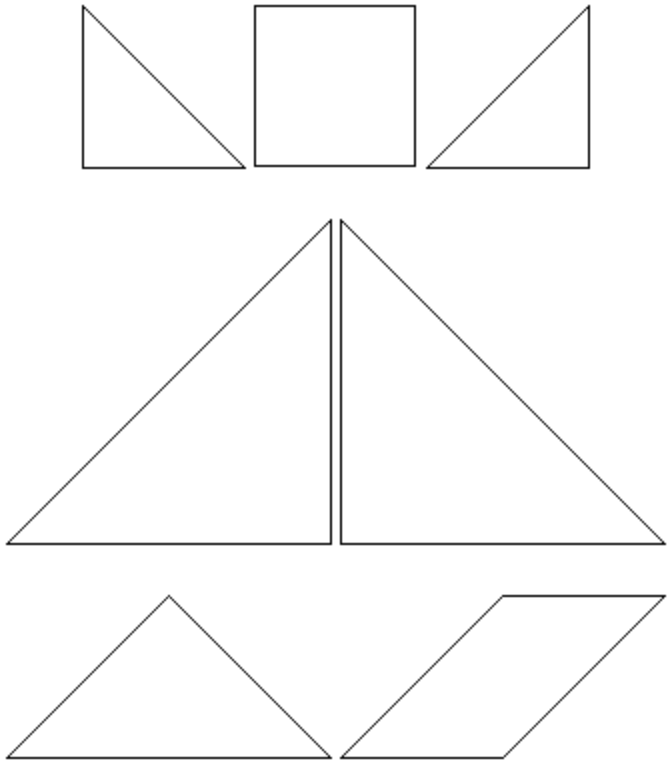
Experiential

Manipulatives

Seven Tangram Pieces

Tom Scavo

Back to Constructing Tangrams || Back to Areas of Tangrams



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http://mathforum.org/

The Internet as a Resource for Hands-on Activities

FigureThis! Math Challenges for Families

Take a Challenge!

Math Challenge #2 BEATING HEART

FigureThis! Math Challenges for Families

How fast does your heart beat?

How long does it take for your heart to beat 1000 times?

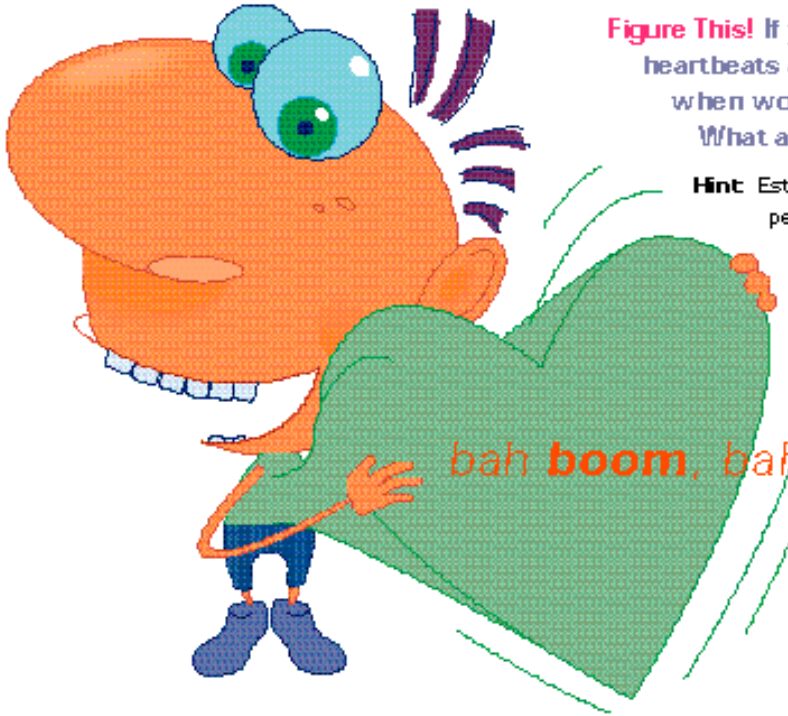


Figure This! If you started counting your heartbeats at midnight on January 1, 2000, when would you count the millionth beat? What about the billionth beat?

Hint: Estimate your heart rate in beats per minute, per hour, and per day.

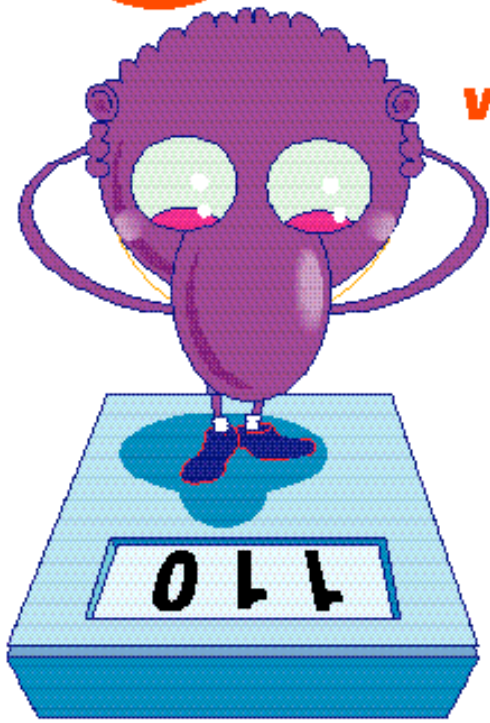
Estimating and understanding large numbers are useful mathematical skills. Without these skills, it is difficult to comprehend the size of the national debt, for example, or how many miles it is to Mars.

bah **boom**, bah **boom**, bah **boom**

For more math challenges and the solutions check us out online at www.figurethis.org

Answer:
It takes about 15 minutes for a heart to beat 1,000 times. On January 10, 2000, your heart would have beat about 1 million times. 27 years later your heart would reach about 1 billion beats.

Math Challenge #21 BODY MASS



FigureThis! Math Challenges for Families

what's your INDEX???

Figure This! Some doctors use body-mass index as an indicator of health risk. According to *The Old Farmer's Almanac 2000*, body-mass index (BMI) can be found using the formula:

$$BMI = \frac{(W \times 705) \div H}{H}$$

where H is height in inches and W is weight in pounds. According to the *Almanac*, an index greater than 27 or less than 19 indicates an increased risk for health problems. Helix is 5 feet, 2 inches tall and weighs 110 pounds.

Is his health at risk?

Hint: Convert Helix's height to inches, then use the formula.

Using and understanding formulas is a critical skill in almost every field, including science, engineering, business, and aviation. Spreadsheets and many computer programs require formulas to analyze situations and predict patterns.

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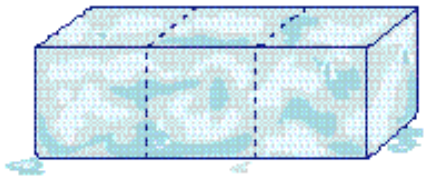
Answer: Based solely on body-mass index, Helix's health is not at risk.

Math Challenge #62 KEEPING COOL

FigureThis! Math Challenges for Families

When should you buy block ice or crushed ice?

Figure This! Which typically melts faster, a single block of ice or the same block cut into three cubes?



Block of ice

Cubes of ice

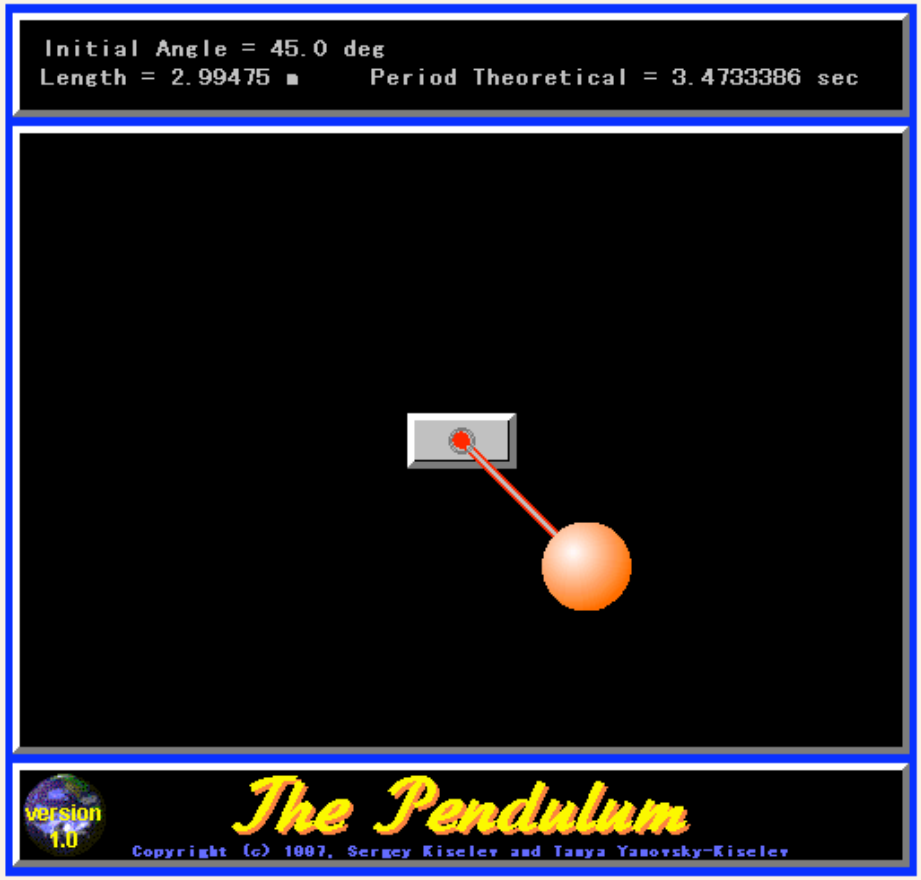
Hint: Compare the exposed areas.

Surface area is a critical factor in heating and cooling. Architects, interior decorators, chemists, and environmental engineers use surface area and volume in their work.

For more math challenges and the solutions check us out online at www.figurethis.org

Answer:
The three cubes will melt faster.

The Pendulum



Drag the mass to its new starting position.

This applet shows a pendulum suspended on a 'rigid string'. One can drag the pendulum to it's starting position. Once in motion, the pendulum can be 'caught' by clicking and holding the mass when it has reached it's maximum angle. Thus, the pendulum can be brought to it's new starting position. The experimental period is shown in the panel above the pendulum itself and is obtained by multiplying the time needed to make half an oscillation by two. The theoretical period, on the other hand, is obtained by a formula which is valid only for small angles., i.e,

$$T = 2\pi\sqrt{L/g}$$

where **T** is the period of the oscillations, **L** is the length of the string and **g** is the acceleration due to gravity.

Thus, as the initial angle is larger one can notice a dramatic difference in the two periods.

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Hands-on Activities

- Provide immersion opportunities in authentic contexts
- Create tasks that are academically & linguistically appropriate to learners' level of proficiency
- Maximize opportunities for socially constructed problem solving & open-ended, learner-generated tasks
- Create diverse collaborative groups
- Integrate opportunities for reflection, discovery of fresh insights, & new understandings
- Integrate tasks for self, peer, & project evaluation

SANGAKU
Celebration of Geometry
Monday, April 24, 2006

An interdisciplinary activity & exhibit, that blends art, mathematics, computer science, & traditional Asian culture

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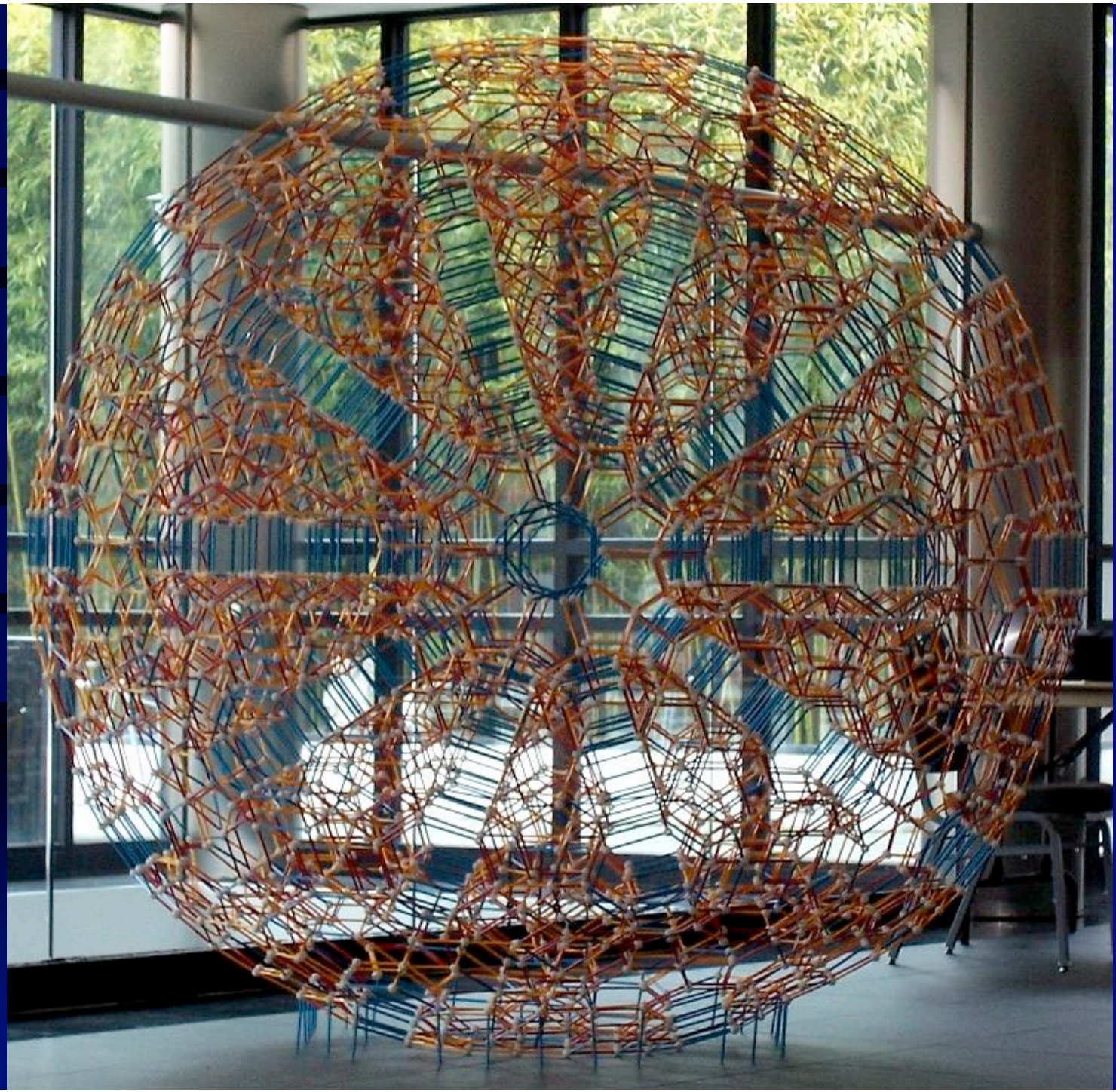
George Hart
Computer Science Department
Stony Brook University
http://www.cs.sunysb.edu/~george/


NEW YORK METS
STAPLES



Developing
The Interdisciplinary Unit
Bread Bread Everywhere

Materials & Ingredients:

- **Toaster, balance scales, magnifying glass, measuring tapes, knife, baskets with assorted bread types: Pita, Italian, French, pumpernickel, wheat, rye, walnut raisin, multi-grain, bagels (some sliced into squares, ovals, circles, & triangles)**

Collaborative Groups Research:

- **Methods of bread preparation**
- **Use of bread as a dietary staple, cultural & religious rituals & ceremony**

Interdisciplinary Inquiry

Bread Bread Everywhere

Mathematics and Science Activities

- Investigation of fractions by cutting & recombining the sliced bread into parts & whole
- Tessellation of triangles, squares, rectangles, hexagons, and octagons
- Measurements of diameter & circumference using different types of bread
- Calculation of the amount of water in bread by comparing the weight before & after toasting
- Measurement of volume by water displacement
- Calculation of density
- Testing for starch

Dorit Kaufman
Director
Professional Education Program
Stony Brook University
www.pep.sunysb.edu

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